

REMARKS

In the Office Action dated December 4, 2002, restriction to one of the following was required:

- I. Claims 1-9 and 19-23, drawn to a circuit board, classified in class 174, subclass 255; and
- II. Claims 10-18, drawn to a process for making a circuit board, classified in class 29, subclass 830.

Applicant was further required to elect a single species for prosecution on the merits and a listing of all claims readable thereon, including any added claims.

Applicant affirms the election to prosecute the claims of Group I in this application.

Claims 10-18 are withdrawn, without prejudice to filing a continuation or divisional application including the claims of Group II and other claims within the scope of the invention.

Applicant elects the species of Figures 1-34. Applicant submits that claims 1, 3-8 and 19 are readable thereon.

Claim 9 was rejected under 35 U.S.C. §112, ¶2. Claims 1-4, 6, 8 and 9 were rejected under 35 U.S.C. §103(a) as unpatentable over Takenouchi et al., U.S. Patent No. 5,744,758.

Claims 5 and 7 were rejected under 35 U.S.C. §103(a) as unpatentable over Takenouchi in view of U.S. Patent No. 5,948,533 to Gallagher.

Claims 19-20 were rejected under 35 U.S.C. §103(a) as unpatentable over Takenouchi et al. U.S. Patent No. 5,744,758 in view of Hung et al., U.S. Patent No. 6,359,341. Claims 2, 9 and 20 have been canceled.

Applicant has amended claim 1 to specify a first laminate made of a first dielectric material consisting essentially of a fiber-reinforced, cured thermosetting resin and a second laminate made of a second dielectric material consisting essentially of a fiber-reinforced, cured thermosetting resin heat-bonded directly to the first laminate along respective inner faces thereof. This feature is not taught or suggested by the art of record.

To the extent that the rejection may be applied to claim 1, as amended, Applicant traverses the rejection. The Office Action acknowledged that Takenouchi '758 does not disclose the first laminate directly connected to the second laminate. The Office Action further acknowledged that Takenouchi '758 also fails to disclose laminates with reinforcing fibers. However, the Office Action stated (without support) that "it would have been obvious to provide the circuit board of Takenouchi with the first laminate directly connected to the second laminate...." and that "it would have been obvious to... provide the modified circuit board of Takenouchi with reinforcing fiber..." This is not the case. Rather, Takenouchi '758 teaches layers 14 of a *thermosetting* material "heat pressed to be integral with each other by the adhesion of the *thermoplastic* resin layer 16...." (Col. 6, lines 24-25). In contrast, claim 1, as amended, specifies that the "second dielectric material consisting essentially of a fiber-reinforced, cured thermosetting resin [is] heat-bonded directly to the first laminate along respective inner faces thereof."

Further, as noted in the Office Action, Takenouchi does not disclose laminates with reinforcing fibers. "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). 'All words in a claim must be considered in judging the patentability of that

claim against the prior art.’ *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).” MPEP §2143.01. To the extent that the Examiner is relying on personal knowledge to cure the deficiencies of the Takenouchi ‘758 reference, Applicants formally request that the Examiner provide an affidavit as required by 37 C.F.R. §1.104(d)(2). (“When a rejection in an application is based upon facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee...”); MPEP 2144.03. Alternatively, if the Examiner is taking Official Notice, then upon traversal, the Examiner should cite a reference in support of his position. MPEP §2144.03. This request is made solely for the purpose of enabling Applicant to adequately respond and rebut the rejection, especially if personal knowledge and/or Official Notice is used in combination with other references where the source of the motivation for the combination is unknown.

Applicant respectfully submits that the references of record, taken alone or in combination, do not teach, suggest or disclose a circuit board with the features specified in claim 1.

Turning to claim 4, the Office Action acknowledged that Takenouchi does not disclose the solder mask layer. However, the Office Action stated that it would be “obvious ...to provide the modified circuit board of Takenouchi with the solder mask layers in order to avoid short circuit with the adjacent contacts.” Notably, the rejection of claim 4 required modifying a modified reference, all without support in the cited prior art. If the rejection of claim 4 is maintained, Applicant traverses and formally requests either an affidavit as required by 37

C.F.R. §1.104(d)(2) or, alternatively, citation of one or more references disclosing the features specified in claim 4.

Turning to claims 5 and 7 it is first noted that no motivation or suggestion for the cited combination of Takenouchi '758 and Gallagher '533. Absent such suggestion or motivation, the combination is improper. MPEP §2143.01 (Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.) Further, “[t]he teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. MPEP 2143, *citing, In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). To the extent that the comment “for the apparent reason of reliable electrical interconnection” was meant to supply the required motivation, it appears that the comment is no more than speculation without the required support in the cited references.

It is also noted that the rejection of claims 5 and 7 is based upon the combination of Gallagher '533 with Takenouchi '758 *only after* multiple unsupported modifications to the Takenouchi '758 reference.

In view of the foregoing, Applicant respectfully submits that claims 5 and 7 are allowable over the art of record.

Claim 6, as amended, specifies the circuit board of claim 1, wherein at least one of a ground plane and a power plane is embedded between the first and second laminates. Takenouchi '758 does not disclose or suggest this feature. “To establish *prima facie* obviousness

of a claimed invention, all the claim limitations must be taught or suggested by the prior art.

MPEP §2143.01. In view of the failure of Takenouchi '758 to disclose the combination of features specified in claims 1 and 6, Applicant submits claim 6 is allowable over the art of record.

Applicant further submits that claim 8 is allowable for the same reasons set forth in connection with claim 1 above. If the rejections of claims 6 and 8 are maintained, Applicant formally requests either an affidavit as required by 37 C.F.R. §1.104(d)(2) or, alternatively, citation of one or more references disclosing the features specified in claims 6 and 8.

Claim 19 has been amended to specify a first laminate made of a first dielectric material consisting essentially of a fiber-reinforced, cured thermosetting resin and a second laminate made of a second dielectric material consisting essentially of a fiber-reinforced, cured thermosetting resin heat-bonded directly to the first laminate along respective inner faces thereof. Applicant submits that claim 19 therefore allowable for the same reasons discussed in connection with claim 1 above.

Applicant has made an earnest attempt to place the case in condition for allowance. Favorable action and passage of the case to issue are respectfully requested.

It is believed that no additional fees are due. However, if this is incorrect, please charge any additional fee to Deposit Account No. 50-1588.

Respectfully submitted,



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